

# NEW JERSEY'S USE OF SENSOR TECHNOLOGY FOR DECISION MAKING

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NJDEP Bureau of Marine Water  
Monitoring

Presented at: NJ Water Monitoring Summit

December 1, 2011

# Slocum Glider



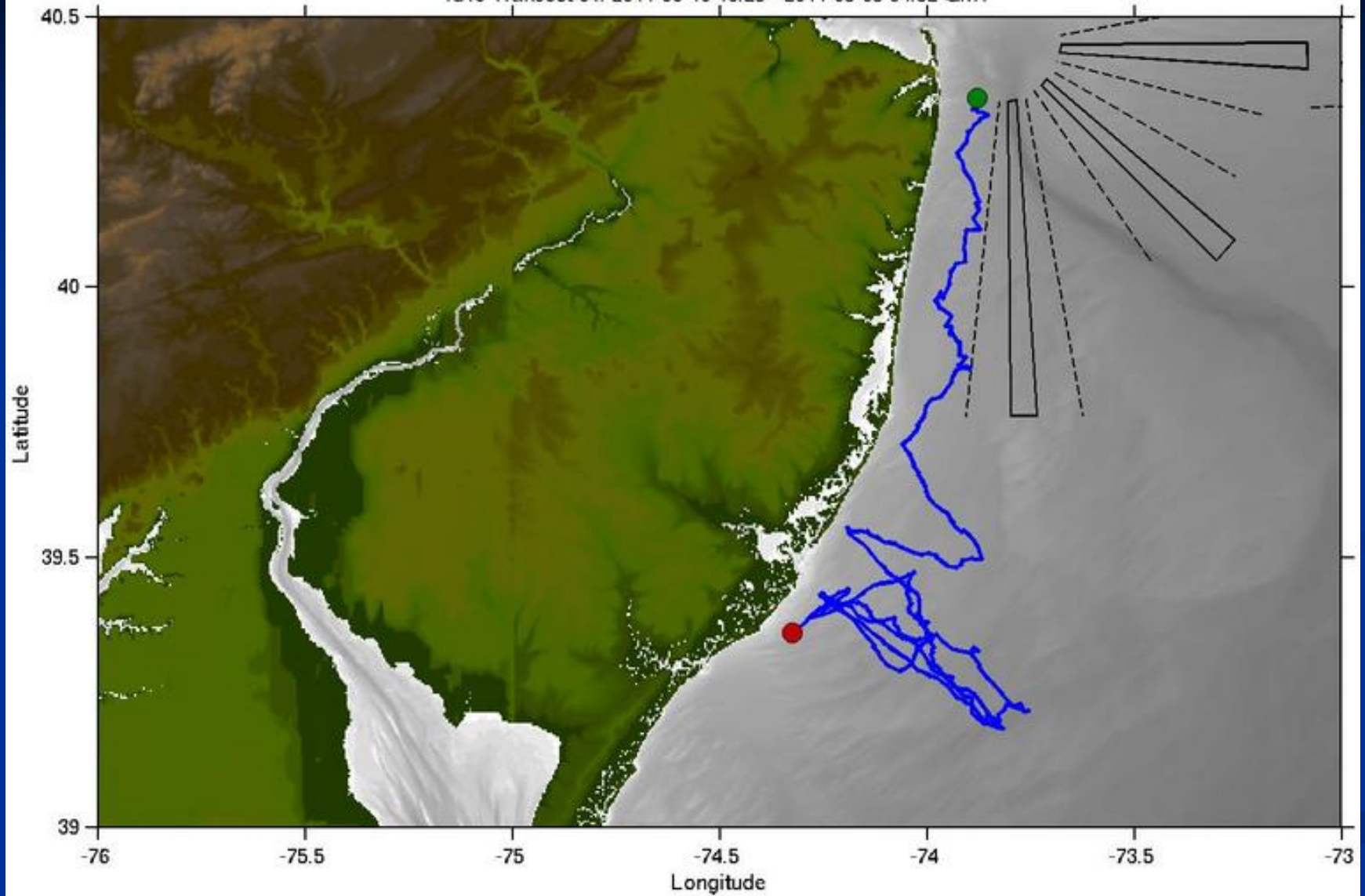
# Summer Work 2011

- A Joint effort with NJDEP, Rutgers U., and USEPA Region 2
- First Glider Deployed 7/13/2011 off of the USEPA Region 2 vessel the Clean Waters
- Went missing within a day and had lost communication.
- Glider was eventually recovered off the Sea Floor after being found by a Monmouth University and Rutgers University side scan sonar mission.
- Glider was hit by a ship and went down.

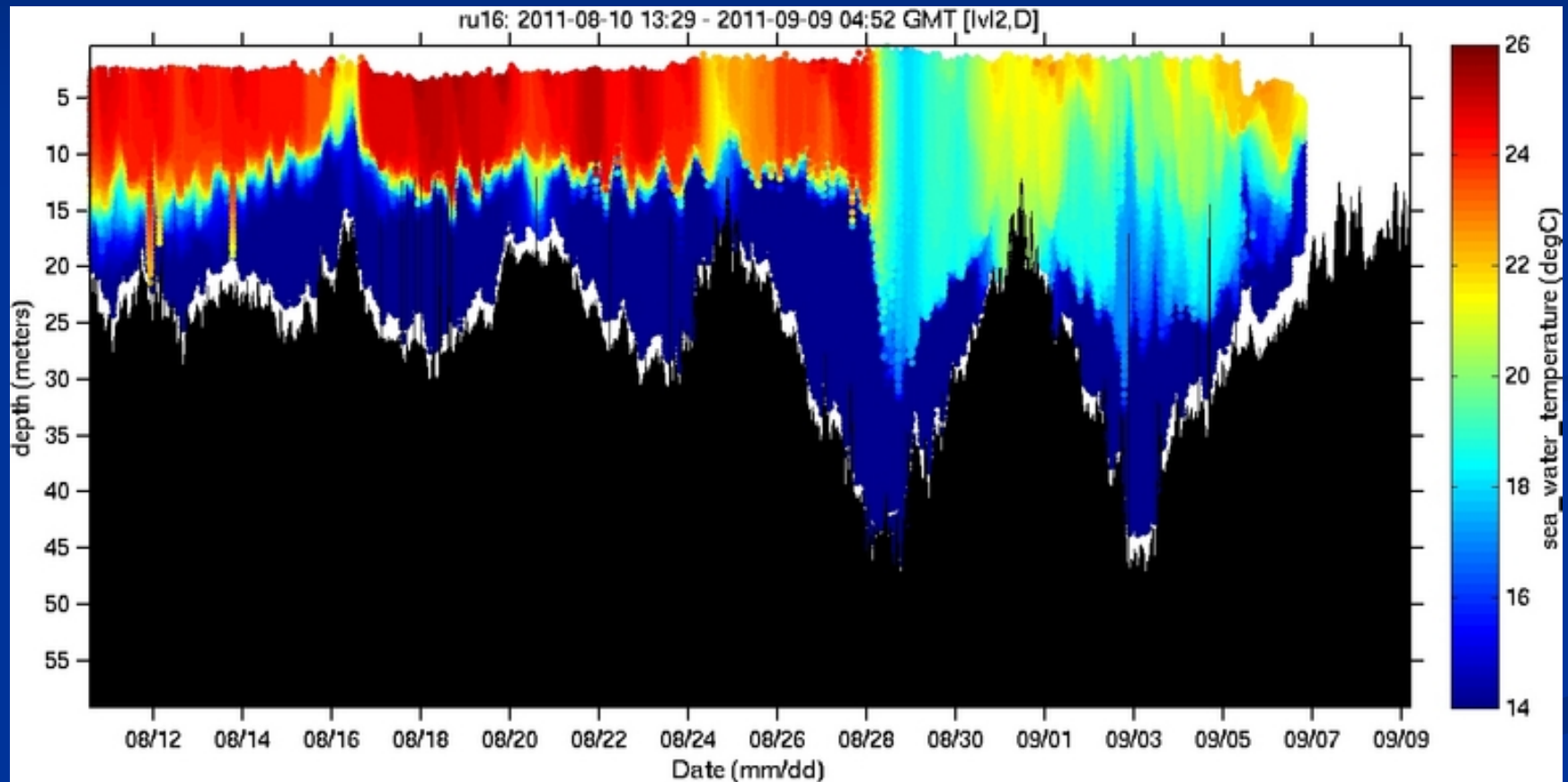
# Summer Work 2011

- A new Glider was deployed (ru16) on 8/10/2011
- Collected Data up to 9/7/2011.
- Collected dissolved oxygen, salinity, and Temperature. Will help with assessing Oxygen conditions in New Jersey's Coastal Waters.
- Will help evaluate the Applicability of current Water Quality Standards
- Was rerouted to stay in a large algal bloom to record Dissolved Oxygen conditions.
- Collected data through Hurricane Irene, can see the mixing due to wave action.

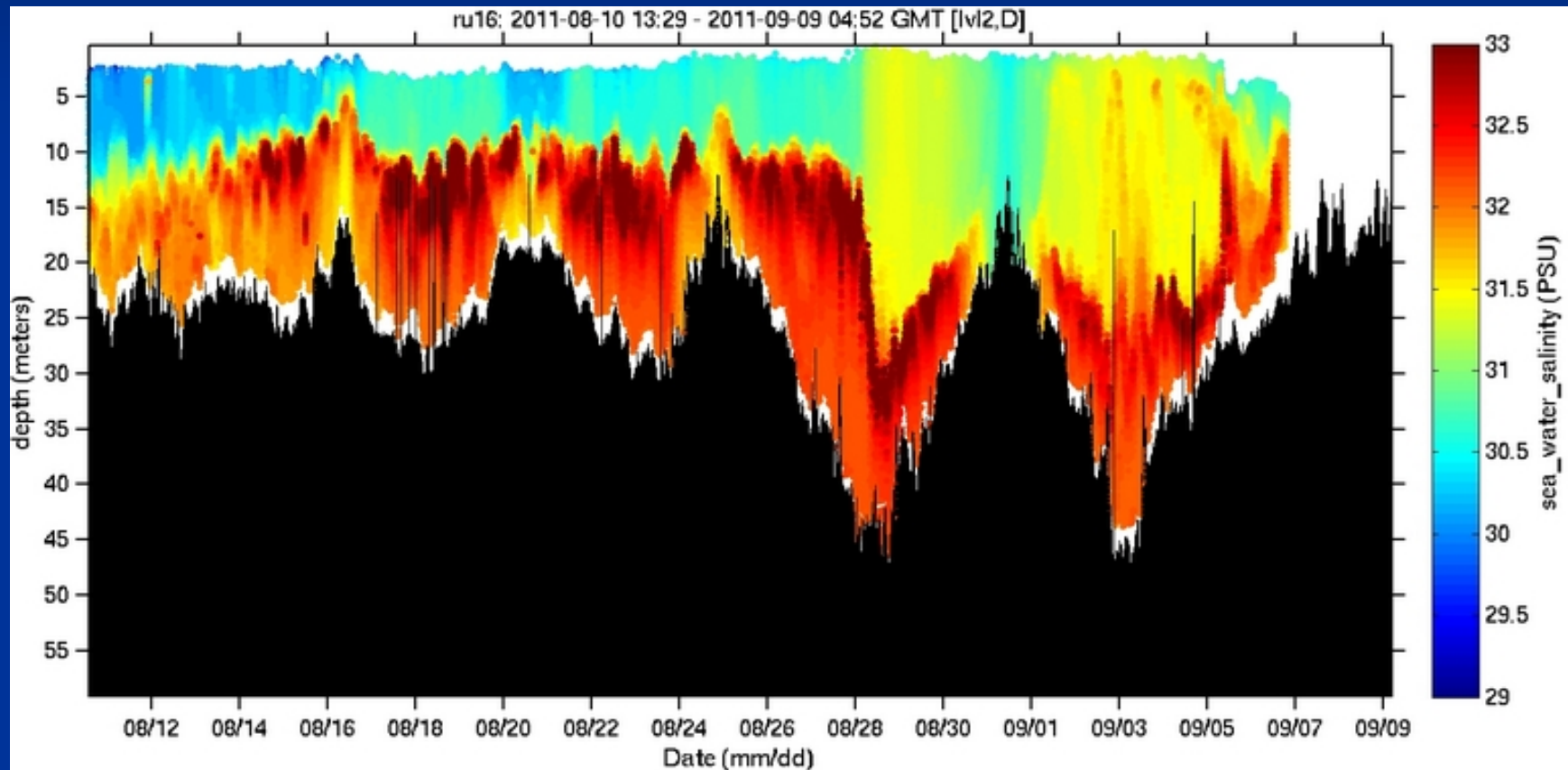
ru16 Transect 01: 2011-08-10 13:29 - 2011-09-09 04:52 GMT



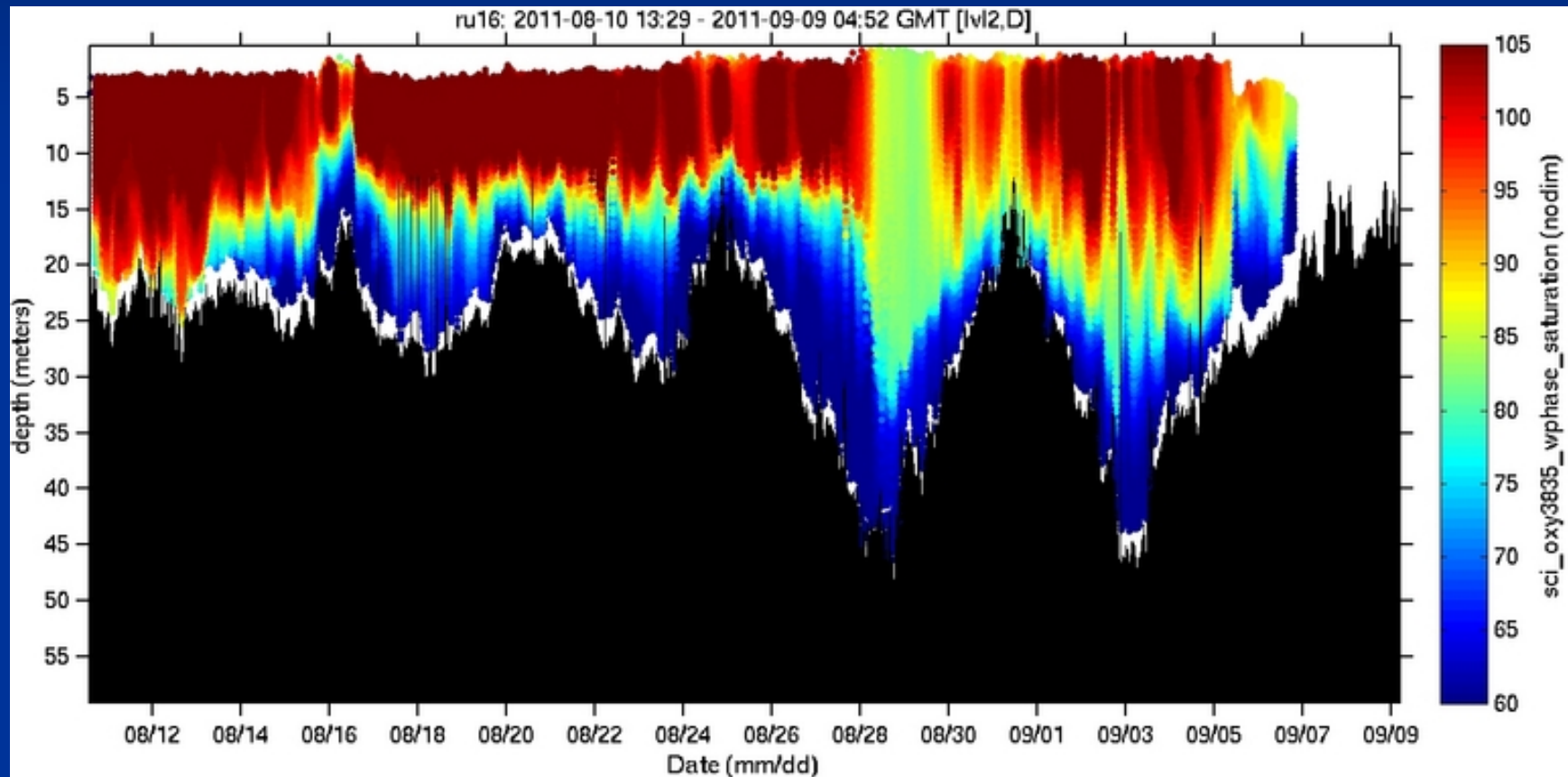
# Temperature



# Salinity



# Oxygen Saturation





# Aircraft Remote Sensing for Chlorophyll

- NJDEP Forest Fire Service Aircraft is utilized.
- Flights are weekly from March through early May, and from mid September through October.
- Flights from Memorial Day to Labor Day occur 6 days a week, weather permitting.
- There is a long flight and short flight.

# Long Flight

NJDEP and Rutgers University Chlorophyll Remote Sensing - Windows Internet Explorer

http://njdep.marine.rutgers.edu/aircraft/

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### NJDEP and Rutgers University Chlorophyll Remote Sensing


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Est. Chlorophyll a  
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NJDEP's Bureau of Marine Water Monitoring has been working in cooperation with the NJ Forest Fire Service, Rutgers University, and USEPA Region 2 to implement aircraft remote sensing for estimating chlorophyll levels in NJ's coastal waters. Since chlorophyll is a plant pigment, high levels of chlorophyll in the water are typically associated with an algal bloom. The plane flies 6 days a week during the summer months, in favorable weather conditions, over the coastal waters of New Jersey. These flights provide a valuable perspective on water conditions and trends and enable the Bureau to target boat sampling to locations where algal blooms might be occurring.

Chlorophyll levels > 12 ug/l are not necessarily harmful to human health or shellfish for consumption but do give the Bureau information on where to

Done

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# Short Flight

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## NJDEP and Rutgers University Chlorophyll Remote Sensing

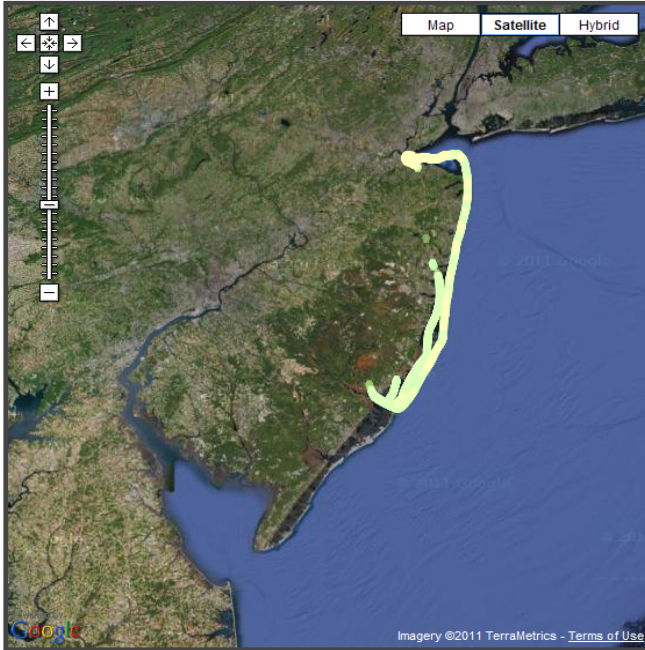
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# Algal Bloom Response (6/3/2011)

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## NJDEP and Rutgers University Chlorophyll Remote Sensing

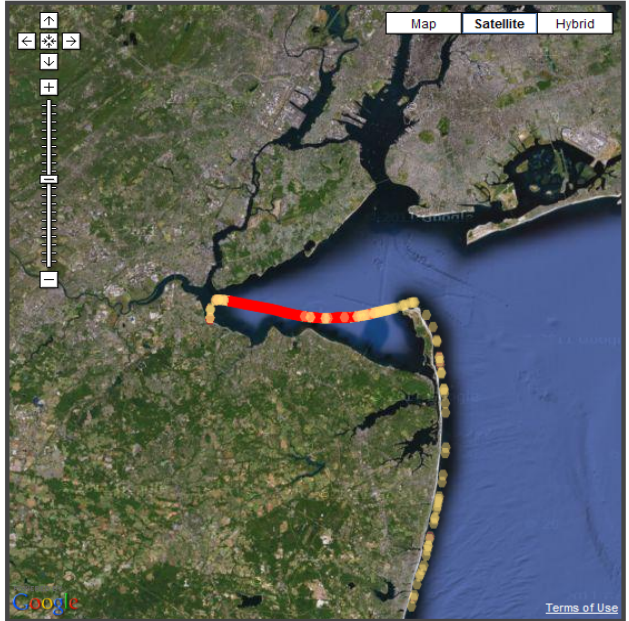
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# Algal Bloom Response (6/4/2011)

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## NJDEP and Rutgers University Chlorophyll Remote Sensing


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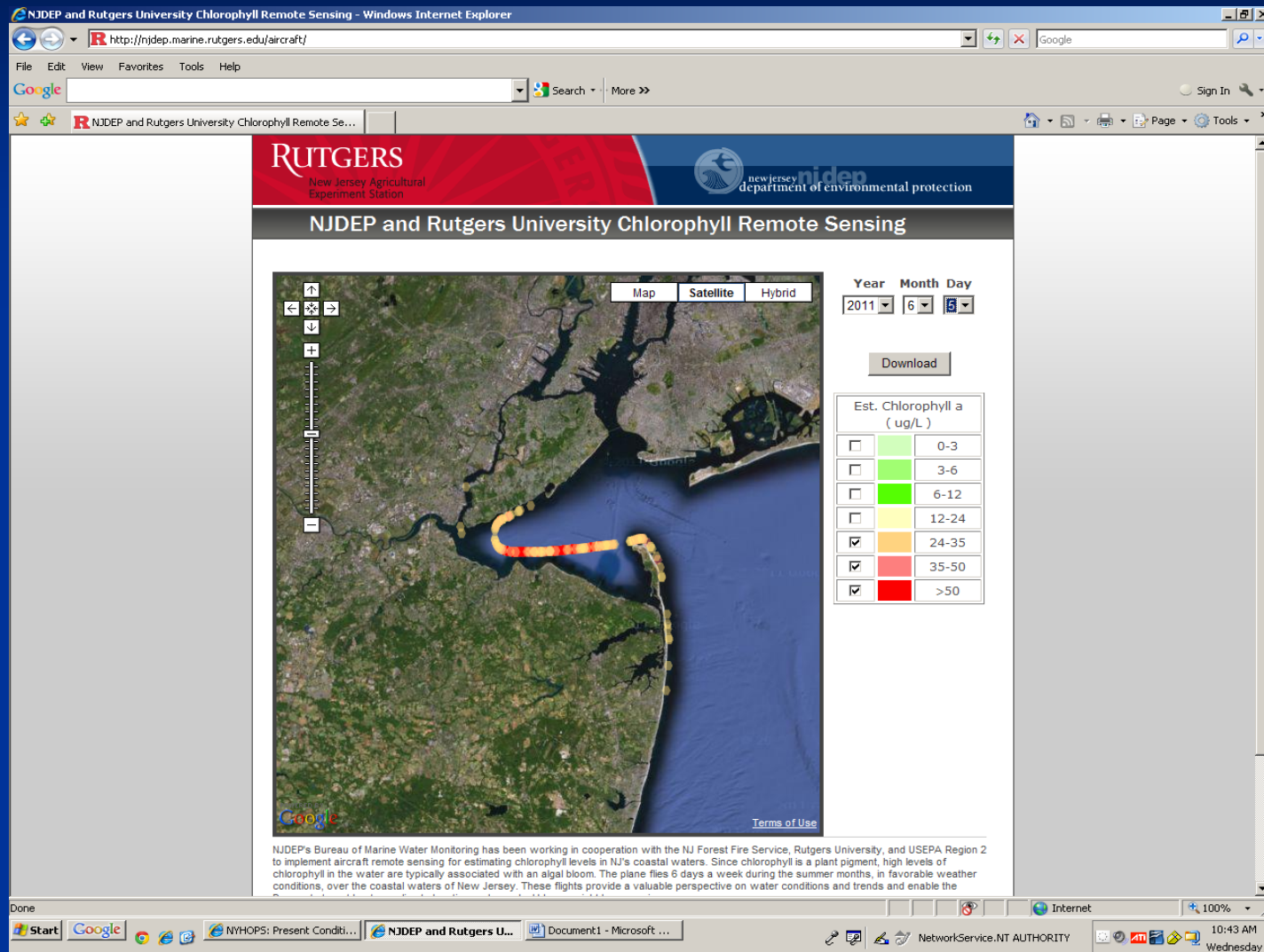
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# Algal Bloom Response (6/5/2011)



# Algal Bloom Response (6/6/2011)

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## NJDEP and Rutgers University Chlorophyll Remote Sensing

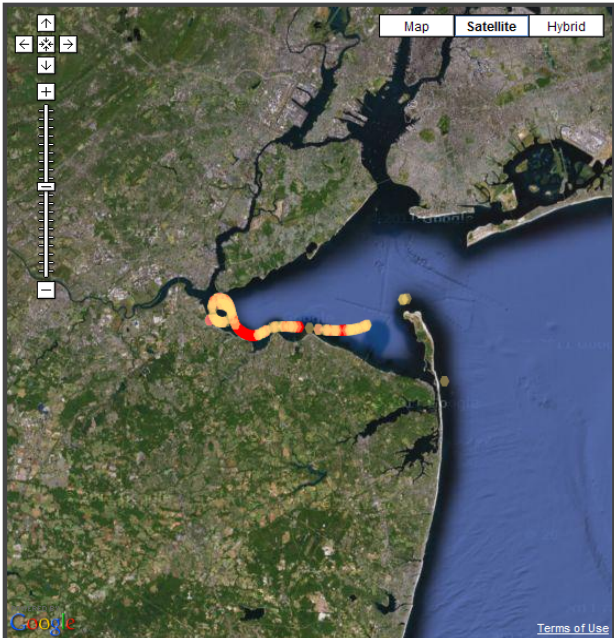
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## Sampling from Monday 6/6/2011

- Bloom still intense, samples collected, showed a large bloom of *Heterocapsa rotundata* (~ 1,240,000 cells/mL).
- *Heterocapsa rotundata* is a non-toxic dinoflagellate that is known to bloom in the late spring and cause the water to appear reddish in color.
- The bloom was most intense by the Keyport Harbor area.



- Work on how to use and evaluate the data generated from the Glider, for assessment and standard evaluation.
- The use of both the remote sensing and glider data allows a large spatial area to be monitored and assessed.
- Identifies areas that need to be targeted for sampling.